

Formal Education – Technologies for Scaling Up ODL Program

Collaborative Regional Public Technology Enhanced Learning Management System (TELMS) in Promoting School Teachers' Lifelong Learning through School ICT Laboratories: Upgrading Knowledge and Human Capital in Malaysia

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Abstract

The purpose of this study is to examine the setting, commissioning and managing of a collaborative regional public Technology Enhance Learning Management System (TELMS) as an innovative platform in helping school teachers in Malaysia in upgrading their quality pedagogical knowledge and human capital. The local public teacher training and educational providers could collaborate with existing schools where the teachers' contribute to organize and dissemination knowledge for life-long learning process in this perspective. They could utilize the existing internet facilities from the school ICT laboratory in upgrading the country's knowledge economy. Factors like demographic, technology availability, learning culture and leadership to support school teachers' life-long learning process to educate and improve knowledge economy through the school ICT laboratory in each state were surveyed. In general, there are significant differences among factors stated above which will upgrade the school teachers' knowledge and knowledge economy in their life-long quest of learning process and upgrading the country's human capital to be competitive in the region. Good governances in management and enhancement of digital technology in the Regional Public TELMS to upgrade school teachers' lifelong learning could be beneficial in upgrading their knowledge and fostering their quality of life and human capital. In addition, school teachers could use the digital platform to foster friendship, exchange of knowledge and networking among their peers in the region and cater universal education philosophy of 'Education for All'. Therefore it is of utmost important for the maximization in the utilization of digital technologies provided by the government initiative to improve its efficiency and integrity on social responsibilities in producing quality human capital through Open and Distance Learning in the quest for lifelong learning perspective.

Keywords: Technology Enhance Learning Management System, life-long learning, school teachers, school ICT Laboratory.

Introduction

Teachers are the backbone of a country's intellectual growth and human capital. The young generation in the country very much depends on the teachers to be educated. Knowledge frontier is unlimited; therefore mankind needs to be vigilant and searching beyond the limit. Teachers are the front runner in this perspective and their lifelong learning to acquire new knowledge is as equally important in the knowledge frontier. Malaysian government has placed priority in teachers' education before its independence in 1957. Teachers training in Malaysia started in a very humble beginning way back in 1950s with the setting up of Malaysian teachers' Training College at Kirkby, Lancashire, operating between 1951 and 1962 and trained primary school teachers and teacher trainers. Over the 12 years period, it trained 1900 teacher trainees for the basic teachers' course and 400 trained teachers for the teacher trainer program. Followed by another Malaysian teacher training college, Brinsford Lodge, Birmingham, opened its doors from 1955 to 1965. It trained 1,200 students for secondary schools. The later years saw the setting up of local teacher training colleges in almost in every state in Malaysia and local public universities offering courses to train teachers on not only pedagogical, psychological and knowledge based but also digital technologies in education, not only for primary, secondary but at college level by moving from conventional to invention and technologically enhanced methodologies especially in this digital age.

Application and digital technologies enhancement in education has always been placed as top priority by the Malaysian government. This is to upgrade the country's human capital, digital and electronic society and realizing Malaysia as a developed country by the year 2020. The application of digital technologies such as the internet and technology enhance learning system in the teaching and learning process as innovation in the Malaysian educational system has since prompt the development of distance, collaborative and e-learning in the andragogical process has also proof as a very useful tool that has contributed to the development digital enhancement among the educators and teacher training colleges as core syllabus in the pedagogical training. The process of digital technologies utilization in education may lead to the country's education reform and revamp in near future to transform the Malaysian citizen into knowledge society and a developed country.

The government's initiative in constructing, supplying and commissioning of ICT laboratory in all schools throughout the country and sponsoring e-learning portal and platforms that will enable students and teachers in the country to access and acquire knowledge. This formed the foundation of life-long learning among teachers in Malaysia. Presently, the setting up of Learning Management System in the tertiary level has shown the path that even at school level it could also acquire and utilize for the purpose of teachers' lifelong learning to upgrade the country's human capital. Tiffin and Rajasingham (1995) quoted that, it would allow fully immersed, interactive real-time communication through audio, textual video and this development would create a communication environment where all functions of a conventional classroom can take place.

The ICT laboratory in schools is a value added knowledge dissemination tool. The best part of Malaysian digital development in education is the commissioning of the 5000 schools throughout the country with ICT laboratories and schools were also provided with laptops and LCDs for the ETeMS projects of 40 to 50 laptops. All the digital technologies are utilized in the teaching and learning process for student and teachers. It would be better if the entire school ICT laboratories could be wired or connected and transformed into a regional collaborative lifelong learning center

through a regional server and regional learning management system. This could accelerate to the paradigm shift of current education reform (Mok and Cheng, 2000)

Deputy Prime Minister Tan Sri Muhyiddin Yassin has launched a Malaysian Teachers' Standards (Standard Guru Malaysia) guidelines as part of the effort to place the country's education system on a par with global standards. The guidelines would serve as a benchmark for some 300,000 teachers to function effectively in classrooms. Therefore ICT and E-Learning in Education is an alternative innovative and collaborative educational platform to support adult lifelong learning for teachers to better themselves in the digital age.

Related Literature

A lot of researches have been conducted on ICT and e learning as an innovative and collaborative platform in education for students but hardly any researches conducted on the school ICT laboratory to support and facilitate adult lifelong learning for working teachers in school either for knowledge generation or upgrading pedagogical skills. Teachers use the digital education technology know-how to teach students but they themselves ignored the accessibility to upgrade themselves to knowledge and education and also further to build pools of human capital. Collaborative digital learning environment can be used widely either for educational or training purposes (Shirley, 2001) Therefore the setting up of regional teachers lifelong learning ICT centers upon the existing school ICT laboratories is an alternative effective way for the existing strength over 600,000 teachers nationwide of utilizing and benefiting from the digital technology.

The creation of a regional collaborative lifelong e learning management system to connect and wire the nationwide schools ICT laboratories will be a cost effective move in disseminations of knowledge and learning for the adult teachers. This would enable them to be centered into one place not only for the purpose of networking among their peers, friendship, racial integration, religious tolerance and knowledge. Therefore as Koatas, Psarras and Stefanos (2002) quoted that academic community is addressing more and more on the rise of on-line community that will be instrumental in the realization of advanced learning society. Internet on-line environment enables new and interesting designs for the support of traditional learning for the development of new forms of learning. All this could also apply into the teachers' lifelong learning platform to create a learning society and human capital of the country.

The much preferred lifelong learning platform for the existing school teachers would be to combine both the electronic-enabled learning system and traditional face to face classroom teaching. The learning methodology for the teachers in schools' demographic continuum comprise of those digital technology savvy and the old timers that should be guided by a trained instructor because Young (2001) suggested that collaborative and e- learning works best within a blended training solution which incorporates traditional methods as well as technology-led learning. One method is to utilize it as a method of providing a consistent level of skills within a team of delegates prior to them participating in an instructor-led session so they can get the most out of the training and the instructors' time and knowledge. Eisinger (2000) also mentioned that by combining traditional learning characteristics with the unique environment available on-line, elements that emerge would differentiate excellent e learning, namely the sharing of knowledge.

Young (2001) suggested that within the web-enabled environment, individuals can access learning materials, courses, individual topics and performance support resources at any time, from anywhere centralized centers of office, at home or while traveling. Standard web browsers

offer a consistent and seamless user interface across a wide variety of workstation platforms and networks. One might also ask for the fulfillment and requirements of the curriculum as well as the content relevancy because most of the courses followed, as Morris (1996) quoted, distance and collaborative interactive project. The production of learning materials could be enjoyed nationwide by those users in the collaborative lifelong learning centers irrespective of their location. New ideas and materials would become immediately available for discussions and trials after dispatch by e-mail to a central server. The central server would serve as a main frame to enable the instructor to upload all learning files and document as well as instruction to the teachers' learning in Malaysia.

There must be some forms of digital security installed as each individual teacher utilize the ICT facility. They have their own private access password and also a firewall to filter those unwanted information which could affect the morality of the teaching fraternity. Fry (2001) noted a series of benchmarks for ensuring the collaborative lifelong teachers learning quality. Evaluating program effectiveness includes a documented technology plan, with password protection, encryptions, back-up system and reliable delivery, established standards for course development, design and delivery, good facilitation of interactive and feedback and the application of specific standard for evaluation. All this would enable smooth accessibility for the school teachers to achieve excellence and acquiring those much needed advance knowledge and adult education. This would lead to the progressiveness of developing human capital in Malaysia

On the other hand, an effective and cost-efficient instruction that can match the needs for skills related to technological change, delivered interactively, at the convenience of the school teachers as lifelong learners. The learners, no matter where their physical location would be, should be able to interact with the instructors and other peers, with the content and with one another in synchronous and or asynchronous mode. This digitalization allows the mergers of tele-communications and computer giving information technology, new ways of learning and teaching in this digital age and further to provide alternatives to lifelong quest of the teachers learners.

Another issue that needs to be addressed is the effectiveness in the management of the regional collaborative teachers' lifelong learning center whereby the collaborative and e-learning learning management system platform needs to have certain quality. As Roffe (2002) proposed, elements of quality control and assurance system in distance learning should produce learning materials and monitoring correspondence learning activities. Thus the sheer newness of teachers' collaborative and e-learning for many teachers and groups could bring pressure on evaluation to yield information about its effectiveness and efficiency as a learning solution. Therefore all the centers need expertise and qualified instructors cum knowledge disseminator to guide the existing teachers in the country the proper ways to use the sophisticated digital technology to create a digital lifelong learning environment. At least senior aged teachers also could gain from these initiative and contribute to the progress of education in Malaysia.

On the other hand, the management perspectives of digital technologies in the school ICT laboratory as regional collaborative teachers' lifelong learning centers are of utmost importance to ensure the success of the lifelong learning process. We are able to see the impact and its effectiveness towards the implementation of a wholesome collaborative teachers' lifelong learning. In the management perspective, as Nicholson (1997) quoted that techniques and technologies can be taught as principles prior to application, whereas the management processes and their complications have to be experienced to be sensed prior to a theory being needed. Therefore trained ICT facility management instructors need to be appointed as permanent staff in all the regional teachers' lifelong learning centers.

To effectively manage the teachers' lifelong Learning Management System that serve the regional collaborative lifelong learning centers for teachers in e-learning platform, one has to play a double role not only as teaching and guidance staff but also as administrator of the learning portal. In order to achieve the targeted success, a series of benchmarks for ensuring e-learning quality and evaluating program effectiveness has to be drawn as to upgrade the teachers' profession later which includes a documented technology plan and the application of specific standard for evaluation need to be adhered and supported by the Malaysian government.

Research Objective

Almost all the primary and secondary schools in Malaysia have ICT laboratories. Therefore the digital technologies could be utilized not only as teaching tools by teachers in school for the students but as collaborative digital technology. Thus this enhances lifelong learning tools for teachers quest for knowledge when it is wired and connected and commissioned into a regional collaborative and teachers' lifelong e learning center through a management learning system to upgrade teachers' knowledge and human capital.

The objective of this study is to determine ways to achieve an effective managerial and application perspective of ICT in the proposed teachers' regional collaborative lifelong learning centers for existing teachers in Malaysia

We could gain insights into how to achieve excellence in the management and maximizing utilization of the existing school ICT laboratories as collaborative and lifelong e learning center and the LMS platform in delivering quality and lifelong education to every teacher in Malaysia.

Research Framework

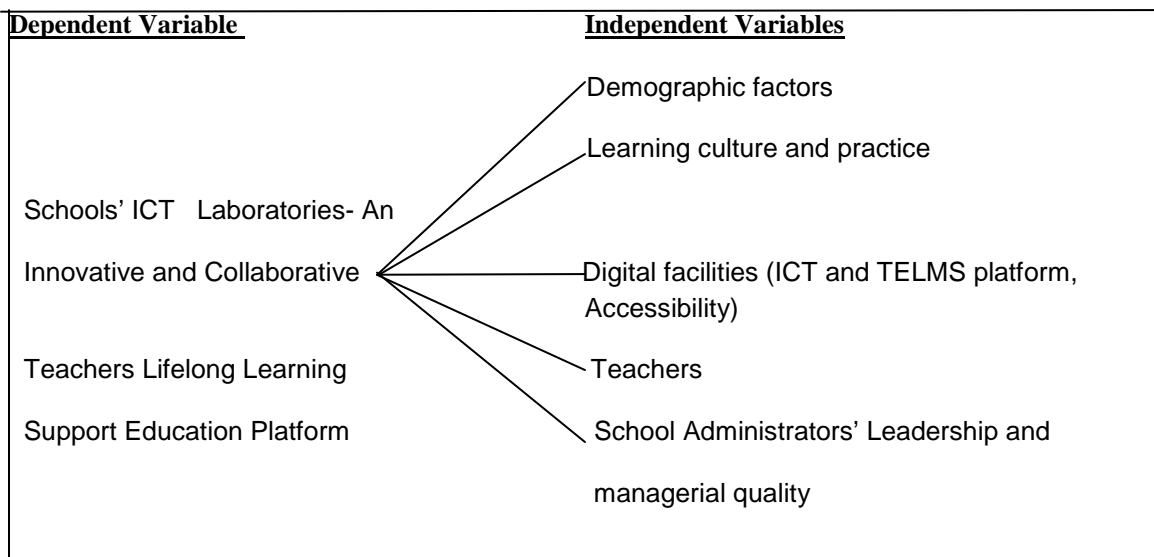


Figure 1: Theoretical Framework

Research Methodology

A set of questionnaire was given to a total of 200 teachers randomly selected from various primary and secondary schools from four states in Malaysia. The questionnaire consists of Part 1

on the respondents' demographical data and Part 2 that includes the dependent and independent variables. Non-parametric and parametric statistical tests were used to analyze the data.

Results

Reliability of instruments

Cronbach Alpha statistic is found to be 0.877. Therefore the reliability of the questionnaire is acceptable.

Descriptive Statistics

Table 1: Summary of Respondents' Characteristics

SUBJECT	FREQUENCY	PERCENTAGE (%)
1. GENDER		
Male	100	50
Female	100	50
2. RACE		
Malay	90	45
Chinese	80	40
Indian	30	15
3. Academic Achievement		
Tertiary Level	160	80
College Level	40	20
4. Working Experience		
6-15 years	75	37.5
>16 years	125	62.5
5. Experience in Using ICT and Internet		
1-5 years	70	35
➤ 8 years	130	65

Table 1.1 and 1.2 summarize the respondents' characteristics. There are 100 male (50%) and 100 female teachers (50%) from various primary and secondary schools of four states in Malaysia chosen randomly for this research. Table 1.3 shows that 80% of the teachers possess basic tertiary education and the rest only college trained. Among them are Malay 45%, Chinese 40% and Indian 15%. Table 1.4 shows 37.5% of

them have between 6 to 15 year of working experiences and the rest have more than 16 years of work experience. Table 1.5 shows that 65% of the respondents have more than 6 years of experience in using ICT and internet.

Inferential Statistics and Discussion

Table 2: The results of ANOVA

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Demographic Factors	Between Groups	29.407	20	1.470	2.156	.004
	Within Groups	122.055	179	.682		
	Total	151.462	199			
Learning culture and practice	Between Groups	38.431	20	1.922	6.427	.000
	Within Groups	53.518	179	.299		
	Total	91.949	199			
Digital technologies facilities	Between Groups	19.533	20	.977	2.662	.000
	Within Groups	65.662	179	.367		
	Total	85.195	199			
Teachers willingness	Between Groups	20.176	20	1.009	2.482	.001
	Within Groups	72.760	179	.406		
	Total	92.936	199			
Leadership Quality	Between Groups	21.032	20	1.052	2.043	.007
	Within Groups	92.120	179	.515		
	Total	113.152	199			
Government support	Between Groups	26.781	20	1.339	3.851	.000
	Within Groups	62.235	179	.348		
	Total	89.017	199			

Note: $\alpha = 0.05$, $N = 200$

Table 2.1 shows there is a strong positive relationship between teachers' academic achievement and schools' ICT laboratory facilities provided. Schools from each state surveyed are trying to provide some form of relax regulations and learning facilities to their teachers or staff who want to follow collaborative lifelong learning programs. In fact, teachers are encouraged to use the internet facilities like networking with their respective peers via learning portal provided through the connectivity of the school ICT facilities. Teachers are also encouraged to attend further training program and lifelong learning classes during the weekend using blended learning methodology to improve themselves in knowledge economy. Majority of teachers using the facilities to not only for their official teaching duties during school hours but also constantly

upgrading themselves by using internet to surf for extra information on teaching materials and knowledge.

Table 2.2 shows that the teachers are able to learn better when instructors incorporate the use of ICT and blended learning in their instructions. Trained and full time or sometime peer instructors are the users of ICT facility in the teaching and learning process. However, some instructors faced limitations in the lifelong learning process as the software and hardware provided were limited. Instructors encounter the problem of being unable to facilitate school teachers in this perspective because not all the ICT laboratories in schools and every units of desktop can access to the electronic learning portal. The only means is through the use of their own Internet at home for networking in their learning and individual consultation at their homes. This affects the school teachers learning process. At the beginning stage of learning, guidance must be slow as the school teachers who are not savvy in technology faced a lot of problems in the usage of digital technology especially those senior teachers.

Table 2.3 shows that there is a strong relationship between instructors' or course managers' commitment and the learning content provided. Instructors are committed in proving and maintaining the learning contents in the portal and it is always ready for the learners to access. The instructors download and upgrade their learning contents from time to time and maintain their portal. They must follow the guidelines formulated by the teacher training division of the Ministry of Education, for example the district information department could channel information on the country's development plan and national agendas or live experiences from the teaching fraternities from schools, colleges and tertiary education. As Pauleen et.al (2004) state that experiential learning-based and team-based assignment which make extensive use of ICT with real life setting could be the best solution in achieving total learning experience combining theory and practice and usefully applied to learners' everyday life in the quest of livelong long learning in Malaysia.

Table 2.4 shows that there is a strong relationship between the learning culture and practice of school teachers and the digital technology provided in education especially school ICT laboratories which could later set and commissioned into a .regional teachers' lifelong learning through the connectivity of schools ICT laboratories as an effective platform for collaborative teachers lifelong learning programs. The LMS learning portal providers' commitment to the teachers lifelong learning programs must be cost effective and fully utilized not only by the instructors and school teachers but also whoever from all levels of education communities in order to function well as a lifelong learning center that could upgrade school teachers' knowledge and human capital as well as bridging the digital divide between urban and rural teachers' community; between the haves and have-nots as well as between the senior and junior teachers in Malaysia.. The effectiveness of regional teachers' lifelong digital learning programs depends very much on the level of priority given to the program. If the ICT and teachers' lifelong collaborative learning portal facility is insufficient to cater for the needs of the users, responsible administrators at the governmental level preferably the directors and his team from the state education department within their state must make an effort to raise funds to fulfill the teachers' needs in their quest to improve their livelihood and knowledge through the regional teachers' livelong ICT learning platforms and programs.

Discussion

The five dimensions of enhancing an innovative regional collaborative and e learning of Malaysian teachers' lifelong LMS platform to educate and improve livelihood of Malaysian school

teachers utilizing the school ICT laboratory, namely demographic continuum, digital technology availability, teachers; learning culture and school administrator leadership and managerial quality could constitute to the success of the program in Malaysia.. Each one of them is equally important in the development and transforming the school teachers in Malaysia into a knowledgeable society. School administrators not only manage the organization as a whole but also other unit in that organization. So long as the education fraternities could see the need and initiate personally for the well being of student, themselves, the society and the country, he or she already has played an important role as an educator and has carried out the much needed responsibility towards the Malaysian community.

The significant difference between instructors from the teachers' quest of lifelong learning in school ICT laboratory and the application of collaborative e learning lifelong learning among the school teachers could be due to the unavailability of general guidelines provided by the governmental authority in managing the appropriate procedures and practices. It may be due to the schools' administrator's own discrepancy. So, the effectiveness in the management and application of ICT in the regional teachers lifelong ICT centers surveyed depends much on the instructors and teachers' own experience and practices in the disbursement of their duties.

A committed school administrator with his instructors will yield the success of the implementation of ICT and collaborative lifelong learning application for the school teachers andragogical approaches in the adults teaching and learning process. Otherwise it will fail, not due to the lack of resources but human factors. Successful implementation of school ICT and collaborative lifelong learning application needs to be compelling to the audience it targets by offering the learner a resource that seems to be appealing, valuable and productive to their goals and aspirations (Henri, 2001). Therefore the school teachers who are in charge of the collaborative school teachers' lifelong ICT learning center and instructors must work hard side by side to transform the school teaching community into a more knowledgeable society. State and school education administrators as leaders will play their roles by helping everybody in the organization, including gaining more insightful views of current reality and this is also in-line with a popular emerging view of leaders as coaches, guides or facilitators. Therefore a strong and well-respected leadership with a clearly defined task would get the best result by fairly directive (Lucey, 1995).

A lot of public fund has been spent on this perspective. The lifelong learning portal administrators and instructors who have to carry out the implementation stages in the regional teachers' lifelong adult's collaborative and e learning system must fully utilize the technology provided in schools throughout Malaysia and also disseminate high quality knowledge to the school teachers as well as offering innovative programs (Gunasekaran; McNeil and Shaul, 2002). The support of the education process are all in the way with key elements inclusive of provision of learning materials, providing facilities for practical work or simulations, enabling questions and discussions, assessments and provision of learners support services (Alexander and McKenzie, 1998).

The significant difference between the school teachers' academic achievement, and work experiences in the usage of ICT and Internet in the school collaborate ICT lifelong learning centers may be due to the lack of the learners' experiences, qualification, usage and application of ICT. This may account for the differences and this will affect the effectiveness in the management and usage of ICT infrastructure provided in the school's ICT laboratory in the country. They need experienced portal administrators and content managers' contribution and help to minimize those shortchanges. The government may accommodate extra bandwidth to their existing technology as John Chambers of CISCO System suggested 'by sticking to the two

fundamental equalizers in life namely internet and education'. The fusion of the two provides an efficient way to empower workforce with the skills and knowledge. It needs to compete amid the rapid pace of change where knowledge management involves a mixture of cultural, organizational, process, management and technology initiatives.

School teachers' demographic factors play a vital part in the success of setting up a regional teacher 'collaborative lifelong learning platform. As a user in the digital facility, one has to equip him or herself with the state of the art learning tools at home too and this needs money. The school teachers could afford to do so but the problem may be due to commitments if they are solely committed to the life-long learning process. Then they will spend time to equip themselves for that purpose or they may set priority themselves. Therefore knowledge gained by teachers through the collaborative lifelong learning application empowers them to know more and learn faster with less cost, and to harness the power of information and knowledge which can result in greater productivity and harmony in a knowledge society.

Conclusion and Recommendations

The Regional Teachers Collaborative Lifelong Learning Management System and portal administrators' effective management and application of ICT must be full time employment basis. Further the digital technology facilities in the teachers' lifelong learning centers needs to be scrutinized to determine the maximize usage.

The success in the management of a Regional Teachers Collaborative Lifelong Learning Management System needs a group of trained and skillful administrators and instructors to collaborate with the capable state education department and school administrator. This will make a vast difference in influencing school teachers' community in their lifelong learning process towards gaining insight into various kind of knowledge needed for the advancement of the Malaysian society.

ICT laboratories in schools throughout Malaysia could be jointly connected through a common, combined effort and standard Learning Management System (LMS) in the dissemination of knowledge not only for students but also for teachers in the country by setting up a standardized ICT and teachers' collaborative lifelong learning portal under the patronage of the Ministry of Education. A supervisory panel has to be set up at the ministerial level to supervise the implementation of the teachers' collaborative lifelong learning centers to synchronize the policies and procedures of disseminations of knowledge towards the school teachers in the processes of transforming and building the country's human capital.

The Malaysian government's initiative of installing and commissioning the broadband and wifi facility and extending the bandwidths throughout the country either publicly or privately has constituted to the advancement of internet and connectivity coupled with the constant supply of electricity throughout the country. This has ensured the success of the digital technology projects in Malaysia.

Bibliography

- A. Gunasekaran, Ronald McNeil and Dennis Shaul (2002), E-Learning: Research and Application. Journal: Industrial and Commercial Training, Vol.34, Issue 2. MCB Univ.Press. Pp.44-53

- Alexander and McKenzie (1998). The Failure of E-Learning in A. Gunasekaran. Journal: Industrial and Commercial Training, Vol.34, Issue 2 Pp.44-53
- Eisinger (2000) A Framework for E-Learning as a Tool for Knowledge Management. Journal: Industrial Management and Data System. Vol.102, Issue 7 MCB Univ. Press. Pp.371-380
- Fry, K (2001) E-Learning Markets and Providers: Some Issues and Prospect. Journal Education and Training, Vol.43, Issue 4/5, Pp.233-229. MCB Univ. Press.
- Henri (2001), Theory of E-Learning, in A. Gunasekaran. Journal: Industrial and Commercial Training Vol.34, Issue 2 Pp.44-53.
- Ian Roffe (2002), E-Learning: Engagement, Enhancement and Execution. Journal: Quality Assurance in Education. Vol.10, Issue 1, MCB Univ. Press.
- Koatas,M; Psarras,J & Stefanos,P (2002), Knowledge and Information Management In e Learning Environment: The User Agent Architecture. Journal: Information Management & Computer Security, Vol.10. Issue 4, MCB Univ. Press. Pp.165-170.
- Lucey, Terry. (1995) Management Information System. (7th Edi). Channel Island: The Guarnsey Press. Co., Ltd.
- Mok Mo Ching and Cheng Yin Cheong (2001) A Theory of Self-learning in a networked human and IT environment: Implications for education reforms. International Journal of Education management, Vol.15 Number 4. Pp.172-186
- Morris T (1996) Internet- The Technology and Potential of An Educational Superhighway. MCCE EDUCOMP, 1996 Pp.13-33.
- Muhyidin Yasin,(2010) Malaysian Teachers' Standards. Malaysia Deputy Prime Minister and Education Minister Special Speech (NSTP 12. Mac)
- Nicholson A (1997) Bringing management reality into the classroom- the development of interactive learning. Journal of management Development. Vol.16.Number 6. Pp.438-451
- Pauleen D.J et.al (2004) ICT –Supported team-based experiential learning: Classroom perspectives. Journal of Education and Training. Vol. 46 Number 2004. Pp.90-99
- Shirley (2001) The User Agent Architecture. Journal: Information Management and Computer Security, Vol.10 Issue 4. MCB niv. Press. Pp. 165-170.
- Tiffin and Rajasingham (1995) in Michael Szabo (1996) Interactive Multimedia As Faculty Renewal And Change Agent: A Three-Pronged Approach To Successful Implementation In Malaysia. EDUCOMP 96. Kuala Lumpur. Pp.50-60.
- Young, K (2001), The Effective Development Of e Learning, Journal: Industrial and Commercial Training. Vol.33 Issue 1, Pp. 5-11.